

University of Bahrain  
College of Information Technology  
Department of Information Systems

ITCS395/495 – Physical Implementation of Databases  
Second Semester 2013/2014  
Midterm Test – Tuesday 29<sup>th</sup> April 2014

Name \_\_\_\_\_

ID# \_\_\_\_\_

Duration: 1 ½ hours

Section \_\_\_\_01\_\_\_\_ Instructor: Dr. Hasan Kamal

**Instructions to the Students:**

- This a closed book, closed notes exam
- Answer all questions
- Be clear and precise in your work. Check your answers before turning them in.
- Switch off your mobile phone, keep it away and never use it during the exam
- Ask the instructor for work sheets in case you need to use them for rough work. Attach them if necessary.
- Put your name and student ID on each of the worksheets you attach.

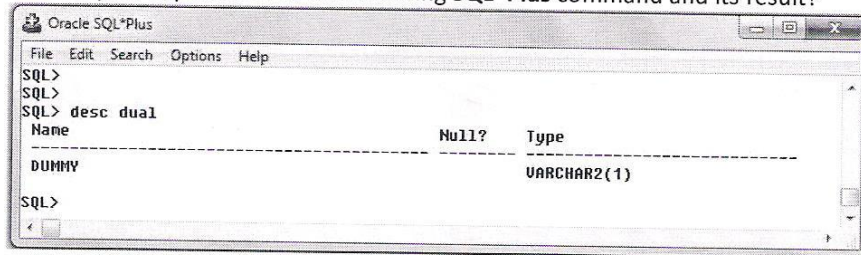
Question	Points	Max. Points
Q1		10
Q2		15
Q3.a		10
Q3.b		10
Q4		5
TOTAL		50

### Question 1:

a. Answer the following questions.

(10 marks)

1. Grant the all users the privileges to perform all possible operations on the EMPLOYEE table that you own.
2. Revoke from the user USER1 the privilege to change the structure of the EMPLOYEE table that you own.
3. Revoke from the user USER2 the privilege to change the values of EMPLOYEE records and fields.
4. What are the data dictionary views? Give an example that shows how to use the SELECT statement to retrieve sequence name, minimum and maximum value of all sequences of a user from the data dictionary.
5. What is your explanation of the following **SQL\*Plus** command and its result?



```
Oracle SQL*Plus
File Edit Search Options Help
SQL>
SQL>
SQL> desc dual
  Name                                Null?    Type
-----
DUMMY                                VARCHA2(1)
```

6. Write an SQL commands that makes use of DUAL?

7. What is the result of the following?

```
dbms_output.put_line(months_between(to_date('12/8/2008','MM/DD/YYYY'),  
to_date('8/12/2008','DD/MM/YYYY')));
```

8. What is the result of the following?

```
dbms_output.put_line(last_day(to_date('12/8/2008','MM/DD/YYYY')));
```

9. What is the result of the following?

```
dbms_output.put_line(lpad(substr('ITCS 395 Section#1',9,9),12,'#'));
```

10. What does each of the following SQL commands generate (in general)? Explain by comparing one command to the other.

```
DESCRIBE USER_CONSTRAINTS;
```

```
SELECT * FROM USER_CONSTRAINTS;
```

**Question 2:** In the following questions, find the correct choice of the given choices. Circle your choices in the provided table

(15 marks)

1. PL/SQL extends SQL by including all of the following except:
  - a) variables
  - b) conditional statements
  - c) reusable program units
  - ☒ d) constants
  - e) nonprocedural constructs
2. Within Oracle DB environment, PL/SQL when compared with other languages such as C and Java, which of the following statements is true
  - a) PL/SQL is harder to learn
  - b) PL/SQL is easier to learn and more efficient
  - ☒ c) PL/SQL is easier to learn but less efficient
  - d) PL/SQL is easier to learn and does not requires an Oracle database or tool
3. Which keywords must be included in every PL/SQL block? (choose two)
  - a) DECLARE
  - ☒ b) END:
  - c) EXCEPTION
  - ☒ d) BEGIN
  - e) DBMS\_OUTPUT.PUT\_LINE
4. What kind of block is defined by the following PL/SQL code?

```
BEGIN
DBMS_OUTPUT.PUT.LINE('My first quiz');
END;
```

  - ☒ a) procedure
  - b) subrouting
  - c) function
  - d) anonymous
5. Which of the following can be assigned to a Boolean variable?
  1. Null
  2. False
  3. True
  4. 0 (i.e. zero)
  - ☒ a) 2 and 3
  - b) 2, 3 and 4
  - c) 1, 2 and 3
  - d) 1, 2, 3 and 4
6. If you are using the %TYPE attribute, you can avoid hard coding the:
  - a) Data type
  - ☒ b) Table name
  - c) Column name
  - d) Constraint

7. What will be displayed when the following block is executed?

```
DECLARE
  v_myvar VARCHAR2(10) := 'Hello' ;
BEGIN
  DECLARE
    v_myvar VARCHAR2(10) := 'World';
  BEGIN
    v_myvar := v_myvar || ' ' || outer.v_myvar;
  END;
  DBMS_OUTPUT.PUT_LINE(inner.v_myvar);
END;
```

- a) HelloWorld
- ☒ b) Hello World
- c) World
- d) The code will fail.

8. What will be displayed when the following code is executed?

```
DECLARE
  x VARCHAR2(6) := 'Chang';
BEGIN
  DECLARE
    x VARCHAR2(12) := 'Susan';
  BEGIN
    x := x || x;
  END;
  DBMS_OUTPUT.PUT_LINE(x);
END;
```

- a) Susan
- b) Chang
- ☒ c) ChangChang
- d) SusanChang
- e) The code will fail with an error

9. TO\_NUMBER, TO\_CHAR, and TO\_DATE are all examples of:

- ☒ a) Implicit conversion functions
- b) Explicit conversion functions
- c) Character functions
- d) Operators

10. Implicit cursors are used for SELECT statements, while explicit cursors are used for DML statements.

- ☒ a) TRUE
- b) FALSE

11. Implicit cursors store rows on disk, while explicit cursors store rows in memory.

- a) TRUE
- ☒ b) FALSE

12. Implicit cursors are defined automatically by Oracle, while explicit cursors must be declared by the PL/SQL programmer.

- a) TRUE
- b) FALSE

13. PL/SQL can convert a VARCHAR2 value containing alphabetic characters to a NUMBER value.

- a) TRUE
- b) FALSE

14. Which one of these SQL statements can be directly included in a PL/SQL executable block?

- a) SELECT last\_name FROM employees  
WHERE employee\_id=100;
- b) DESCRIBE employees;
- c) UPDATE employees  
SET last\_name='Smith';
- d) DROP TABLE employees;

15. Which of the following is NOT a good guideline for retrieving data in PL/SQL?

- a) Declare the receiving variables using %TYPE
- b) The WHERE clause is optional in nearly all cases.
- c) Specify the same number of variables in the INTO clause as database columns in the SELECT clause.
- d) THE SELECT statement should fetch exactly one row.

#### M/C ANSWERS

1	a	b	c	d
2	a	b	c	d
3	a	b	c	d
4	a	b	c	d
5	a	b	c	d
6	a	b	c	d
7	a	b	c	d
8	a	b	c	d
9	a	b	c	d
10	a	b	c	d
11	a	b	c	d
12	a	b	c	d
13	a	b	c	d
14	a	b	c	d
15	a	b	c	d



### Question 3 (part a):

(10 marks)

Consider the following relational schema for database with information about TV Series. For example, "Niran" Season 1 and "Niran" Season 2 would be two different TV Series.

- **TVSERIES**(seriesname, season, year)
- **ACTORS**(actor\_id, lname, fname, gender, DoBirth)
- **TVSERIESCASTS**(seriesname, season, actor\_id)

(seriesname, season) forms the primary key for TVSERIES.

For the table ACTORS, the primary key is ~~stage name~~ actor\_id

TVSERIESCASTS has a foreign key to TVSERIES and one to ACTORS.

Give SQL statements to create the tables for the above. Specify also the PRIMARY and FOREIGN KEY constraints in the SQL statements. Choose appropriate data types for each column.

1. Creation of table **TVSERIES**: (Add the constraint that a season is a positive number ranging from 1-30)
2. Creation of table **ACTORS**: (Add the constraint that gender should be either M or F, and DoBirth cannot be null)
3. Creation of table **TVSERIESCASTS**: (Specify all foreign key constraints as named constraints)
4. Add a new column DoDeath to the **ACTORS** table. This field is meant to record when a given actor died. It will be null if the actor is still alive.
5. Disable the constraint that actor\_id in **TVSERIESCASTS** acts as a foreign key to the **ACTORS** table.

### Question 3 (part b):

Write the SQL statements that you would have used to do the following

(10 marks)

1. Insert a row in the table ACTORS for an actor who is still alive with the following details: 7SAINO, A. Redha, A. Hussain, 15 July 1939, Male. (assuming there is currently a column DoDeath added to the table)
2. Modify the year of Niran series 2 to 2005.
3. Create a view table named IN\_MEMORY that displays all dead actors who participated in all series of ALBAIT AL-OWD.
4. For each TV Series, list the first name and last name of all the actors who acted in all the seasons of that series. Order series alphabetically; order actors by the last name.
5. For each actor, list his id, first and last name and the total number of series he acted in.



#### Question 4: Consider the Northwoods University database

Write a PL/SQL block that displays for each faculty staff of Northwoods University: his ID, Name (family name followed by a comma and first name) and a list of student IDs he is currently advising. A sample output (that might be different from what you'll get) is shown below. (5 marks)

##### Sample Output:

```
1 Marx, Teresa:
-> JO100
-> PE100
-> MA100

2 Zhulin, Mark:
-> SM100

3 Langley, Colin:
-> NG100

4 Brown, Jonnel:
-> JO101

5 Sealy, James:
```

##### Part of Northwoods ER

